Spray Drift From Ground Hydraulic Applications

Spray Drift Task Force

- Consortium of pesticide registrants
- Formed in response to EPA data requirements
- Supports registration of more than 2,000 products

Purpose of the SDTF Studies

- Quantify drift from ground, aerial, airblast and chemigation
- Use for risk assessments

Spray Drift is not Active Ingredient Specific

- Formulation/tank mix have small effect - but not the active ingredient itself
- Droplet size spectrum and height are the major variables
- Wind speed next, then less impact of relative humidity, application speed and non-volatile fraction

Spray Drift vs. Vapor Drift

- SDTF measure primary spray drift
- SDTF = movement of droplets and is generic
- Vapor drift = movement of gas and is product-specific

EPA Scientific Review

The information being presented is not an in-depth presentation of all data generated by the SDTF.

Use of pesticide products is strictly governed by label instructions.

Always read and follow the label directions.

What do the SDTF findings tell us?

- Confirm and quantify the factors affecting drift
- Droplet size is the most important factor
- Drift only occurs downwind
- Cannot totally eliminate drift with current technology
- There are many ways to minimize drift
- Most of the spray stays on target

Objective

Develop a generic database for evaluating a range of:

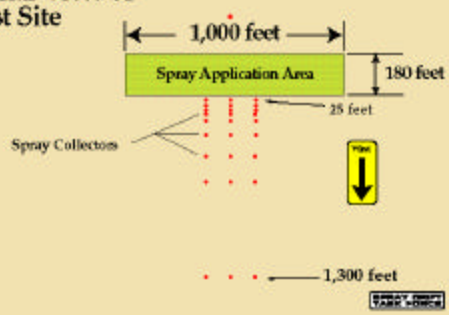
- Equipment combinations
- Atmospheric conditions

Factors Affecting Drift in Ground Hydraulic Applications

- Nozzle height
- Droplet size
- Wind speed

Test Location

Aerial View of Test Site



Droplet size is the most important factor influencing drift.

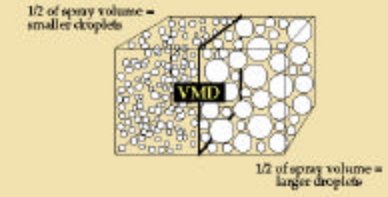
Droplet Size Studies

- Atomization studies in wind tunnels

Droplet Size Studies

- Atomization studies in wind tunnels
- Volume Median Diameter (VMD)

VMD
Volume Median Diameter*



*In general, the bigger the VMD, the bigger the droplets.

Droplet Size Studies

- Atomization studies in wind tunnels
- Volume Median Diameter (VMD)
- Percent volume < 141 microns

Test Application Variables

(48 applications)

Nozzle	Pressure (psi)	Use *	Nozzle Height (inches)
8010LP	20	residential/ right-of-way	20 and 50
8004LP	20	agricultural	20
8004	40	agricultural	20 and 50
TX6	55	agricultural - canopies - low volume	20 and 50

* Ground speeds at 5 mph and/or 15 mph

Droplet Sizes Produced by Nozzle/Pressure Combinations

Nozzle	Pressure (psi)	VMD (microns)	Volume < 141 microns (%)
8010LP	20	762	1
8004LP	20	486	2
8004	40	341	7
TX6	55	175	26

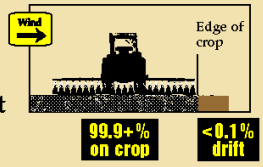
Atmospheric Conditions

Temperature:	44° F to 91° F
Relative humidity:	8% to 82%
Wind speed:	5 mph to 20 mph

Findings

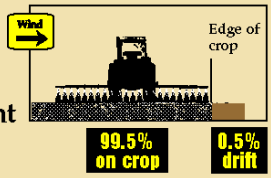
Typical Ground Hydraulic Application

1200 ft wide field
8004 nozzles
40 psi pressure
20 inch nozzle height
10 mph crosswind

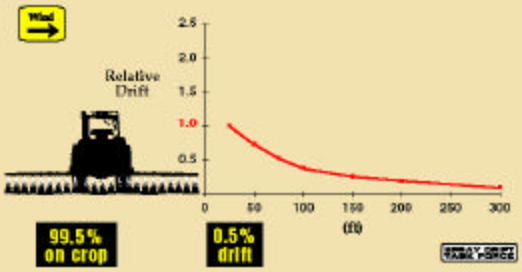


Average SDTF Control Application
24 replicates

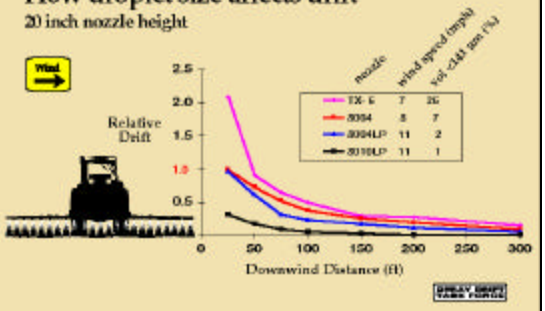
180 ft wide field
8004 nozzles
40 psi pressure
20 inch nozzle height
10 mph crosswind



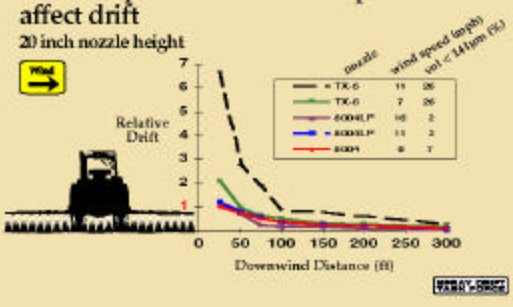
Drift from the SDTF Control Application
1.0 = 0.08 oz per acre



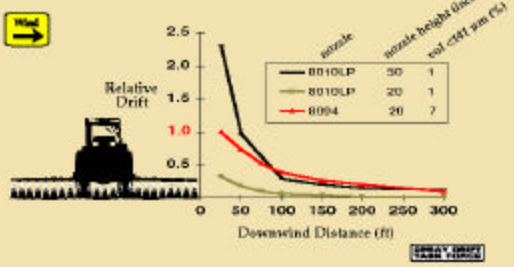
How droplet size affects drift
20 inch nozzle height



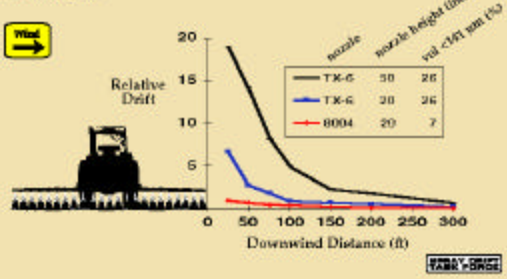
How droplet size and wind speed affect drift
20 inch nozzle height



How nozzle height affects drift
8010LP nozzle



How nozzle height affects drift
TX-6 nozzle



Conclusions

Factors Affecting Drift in Ground Hydraulic Applications

- Nozzle height
- Droplet size
- Wind speed

SDTF Data Will Be Used For Environmental Risk Assessments

- Active ingredients have very little affect on drift
- Active ingredients differ in potential for environmental effects
- Buffer zones can protect sensitive areas
- Buffer zones are upwind and adjacent to the sensitive areas